

IN THE CLAIMS:

1.-30. (Canceled)

31. (Previously Presented) An apparatus for vaporizing and transporting precursor molecules to a deposition chamber for deposition of a thin film on a substrate, the apparatus comprising:

an ionic liquid source that contains no solid portion;

a carrier gas source in fluid communication with the ionic liquid source; and

a deposition chamber in fluid communication with the carrier gas source.

32. (Previously Presented) A system for vaporizing and transporting precursor molecules to a deposition chamber for deposition of a thin film on a substrate, the system comprising:

an ionic liquid source that contains no solid portion;

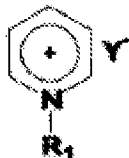
a carrier gas source;

a bubbler device for delivering the carrier gas source to the ionic liquid source; and

a deposition chamber in fluid communication with the ionic liquid source to receive vaporized molecules from the ionic liquid source.

33-44. (Canceled)

45. (Previously Presented) The apparatus of claim 31, wherein the ionic liquid is of the formula:



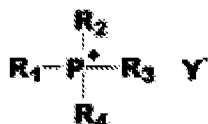
wherein R_1 is alkyl and Y^- is selected from a group consisting of halides, sulfates, nitrates, acetates, nitrites, tetrafluoroborates, tetrachloroborates, hexafluorophosphates, $[SbF_6]^-$, chloroaluminates, bromoaluminates, chlorocuprates, heteropolyanions, trifluoromethanesulfonates, and mixtures thereof.

46. (Previously Presented) The apparatus of claim 31, wherein the ionic liquid is of the formula:



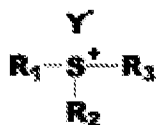
wherein R_1 and R_2 are alkyls and Y^- is selected from a group consisting of halides, sulfates, nitrates, acetates, nitrites, tetrafluoroborates, tetrachloroborates, hexafluorophosphates, $[SbF_6]^-$, chloroaluminates, bromoaluminates, chlorocuprates, heteropolyanions, trifluoromethanesulfonates, and mixtures thereof.

47. (Previously Presented) The apparatus of claim 31, wherein the ionic liquid satisfies the formula:



wherein R_1 , R_2 , R_3 , R_4 are alkyls and Y^- is selected from a group consisting of halides, sulfates, nitrates, acetates, nitrites, tetrafluoroborates, tetrachloroborates, hexafluorophosphates, $[SbF_6]^-$, chloroaluminates, bromoaluminates, chlorocuprates, heteropolyanions, trifluoromethanesulfonates, and mixtures thereof.

48. (Previously Presented) The apparatus of claim 31, wherein the ionic liquid satisfies the formula:



wherein R_1 , R_2 , and R_3 are alkyls and Y^- is selected from a group consisting of halides, sulfates, nitrates, acetates, nitrites, tetrafluoroborates, tetrachloroborates, hexafluorophosphates, $[SbF_6]^-$, chloroaluminates, bromoaluminates, chlorocuprates, heteropolyanions, trifluoromethanesulfonates, and mixtures thereof.

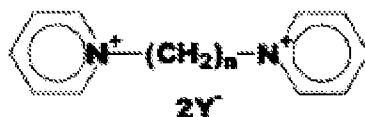
49. (Previously Presented) An apparatus for vaporizing and transporting precursor molecules to a deposition chamber for deposition of a thin film on a substrate, the apparatus comprising:

an ionic liquid source;

a carrier gas source in fluid communication with the ionic liquid source; and

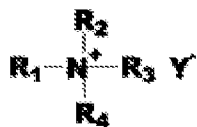
a deposition chamber in fluid communication with the carrier gas source;

wherein the ionic liquid satisfies the formula:



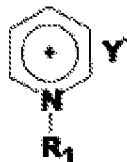
wherein n is from about 1 to about 10 and Y⁻ is selected from a group consisting of halides, sulfates, nitrates, acetates, nitrites, tetrafluoroborates, tetrachloroborates, hexafluorophosphates, [SbF₆]⁻, chloroaluminates, bromoaluminates, chlorocuprates, heteropolyanions, trifluoromethanesulfonates, and mixtures thereof.

50. (Previously Presented) The apparatus of claim 31, wherein the ionic liquid satisfies the formula:



wherein R₁, R₂, R₃, R₄ are alkyls and Y⁻ is selected from a group consisting of halides, sulfates, nitrates, acetates, nitrites, tetrafluoroborates, tetrachloroborates, hexafluorophosphates, [SbF₆]⁻, chloroaluminates, bromoaluminates, chlorocuprates, heteropolyanions, trifluoromethanesulfonates, and mixtures thereof.

51. (Previously Presented) The system of claim 32, wherein the ionic liquid is of the formula:



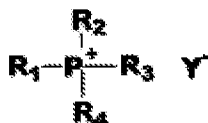
wherein R_1 is alkyl and Y^- is selected from a group consisting of halides, sulfates, nitrates, acetates, nitrites, tetrafluoroborates, tetrachloroborates, hexafluorophosphates, $[SbF_6]^-$, chloroaluminates, bromoaluminates, chlorocuprates, heteropolyanions, trifluoromethanesulfonates, and mixtures thereof.

52. (Previously Presented) The system of claim 32, wherein the ionic liquid is of the formula:



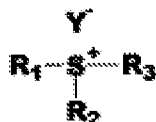
wherein R_1 and R_3 are alkyls and Y^- is selected from a group consisting of halides, sulfates, nitrates, acetates, nitrites, tetrafluoroborates, tetrachloroborates, hexafluorophosphates, $[SbF_6]^-$, chloroaluminates, bromoaluminates, chlorocuprates, heteropolyanions, trifluoromethanesulfonates, and mixtures thereof.

53. (Previously Presented) The system of claim 32, wherein the ionic liquid satisfies the formula:



wherein R_1 , R_2 , R_3 , R_4 are alkyls and Y^- is selected from a group consisting of halides, sulfates, nitrates, acetates, nitrites, tetrafluoroborates, tetrachloroborates, hexafluorophosphates, $[SbF_6]^-$, chloroaluminates, bromoaluminates, chlorocuprates, heteropolyanions, trifluoromethanesulfonates, and mixtures thereof.

54. (Previously Presented) The system of claim 32, wherein the ionic liquid satisfies the formula:



wherein R_1 , R_2 , and R_3 are alkyls and Y^- is selected from a group consisting of halides, sulfates, nitrates, acetates, nitrites, tetrafluoroborates, tetrachloroborates, hexafluorophosphates, $[SbF_6]^-$, chloroaluminates, bromoaluminates, chlorocuprates, heteropolyanions, trifluoromethanesulfonates, and mixtures thereof.

55. (Previously Presented) A system for vaporizing and transporting precursor molecules to a deposition chamber for deposition of a thin film on a substrate, the system comprising:

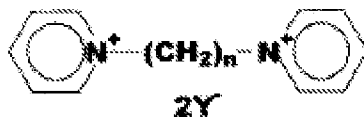
an ionic liquid source;

a carrier gas source;

a bubbler device for delivering the carrier gas source to the ionic liquid source; and

a deposition chamber in fluid communication with the ionic liquid source to receive vaporized molecules from the ionic liquid source;

wherein the ionic liquid satisfies the formula:



wherein n is from about 1 to about 10 and Y⁻ is selected from a group consisting of halides, sulfates, nitrates, acetates, nitrites, tetrafluoroborates, tetrachloroborates, hexafluorophosphates, [SbF₆]⁻, chloroaluminates, bromoaluminates, chlorocuprates, heteropolyanions, trifluoromethanesulfonates, and mixtures thereof.

56. (Previously Presented) The system of claim 32, wherein the ionic liquid satisfies the formula:



wherein R₁, R₂, R₃, R₄ are alkyls and Y⁻ is selected from a group consisting of halides, sulfates, nitrates, acetates, nitrites, tetrafluoroborates, tetrachloroborates, hexafluorophosphates, [SbF₆]⁻, chloroaluminates, bromoaluminates, chlorocuprates, heteropolyanions, trifluoromethanesulfonates, and mixtures thereof.

57. (Previously Presented) An apparatus according to claim 31, further comprising:
a first vessel containing a first precursor and a second vessel containing a second precursor, each first and second vessel in fluid communication with the ionic liquid source, the carrier gas source, and the deposition chamber.